

**TITLE:** A permanent tank adapted to a geothermal system for eliminating air into the pipes of the geothermal system.

**BACKGROUND OF THE INVENTION:**

**Field of the invention:**

More particularly, the present invention relates to a permanent tank adapted to a geothermal system for eliminating air into the pipes of the geothermal system.

**Description of the related art:**

A search of prior art records has unveiled the following patents:

1. CA 2,253,764 issued in 1998 to Deflandre;
2. US 5,729,992 issued in 1998 to Lambert;
3. US 6,112,833 issued in 2000 to Lambert;
4. US 6,347,748 issued in 2002 to Lyons;
5. US 6,051,141 issued in 2000 to Forbes;
6. US 5,816,314 issued in 1998 to Wiggs;
7. US 5,758,514 issued in 1998 to Gallatin;
8. US 5,634,515 issued in 1997 to Lambert;
9. US 5,623,986 issued in 1997 to Wiggs;
10. US 5,515,679 issued in 1996 to Shulman;

**11. US 5,484,231** issued in 1996 to Cannan; and

**12. US 5,483, 797** issued in 1996 to Bronicki.

As can be seen the patents mentioned above are probably the most relevant.

**Summary of the invention:**

The gist of the invention is therefore to eliminate air into the pipes of a geothermal system.

The present invention relates to a permanent tank enabling to eliminate air into the pipes of the geothermal system, prevent the damage into the pipes of the geothermal system, ensure a fluid without air and increase the efficiency of the geothermal pipe.

When the geothermal system is started, a pump in shutoff circuit enables the fluid having 75 % of water and 25 % of methanol to circulate between a geothermal thermopump and a geothermal sensor in the ground.

The fluid entrance is located in middle of the tank that is connected by a tee to a connecting pipe of each side and which is connected to a shutoff valve which is connected to a purging and filling valve and which is connected to an adapter that is connected to the geothermal pipe.

Moreover, each purging and filling valve enables to eliminate air and

do the filling in the geothermal system by means of an external pump that is connected to the geothermal system.

The fluid exit is located in bottom of the tank that is connected to a elbow which is connected to an optional pump which is connected to a connecting piece that is connected to a shutoff valve and which is connected to an adapter that is connected to the geothermal pipe.

Seeing that the diameter is taller than its entering, that allows to decrease the fluid speed and separate air from fluid in directing air towards the top of the tank and the fluid towards the bottom of the tank.

A pipe having an upper transparent portion is connected by a tee to each end of the tank for visualize in all time the state of the system, and the valves are connected to the pipe for adding fluid if necessary or eliminating air.

Finally, the tank may be installed to the geothermal system without use the optional pump enabling to do again circulate the fluid coming from the tank inside the geothermal pipe.

#### **Brief description of the several views of the drawing(s):**

Figure 1 is a perspective view of a the installation of the tank;

Figure 2 is a front view of the installation of the tank showing the

direction of the fluid inside the tank, and which is directed by an optional pump throughout the pipes of the geothermal system;

Figure 3 is a front view of the installation of the tank showing the direction of the fluid inside the tank, and which is directed by an optional pump throughout the pipes and geothermal system; and

Figure 4 is an exploded view of the figure 1.

**Detailed description of the invention:**

Referring to the figs. 1 to 4, it may be seen that a tank (1) of the present invention enables to eliminate air into the pipes of the geothermal system, prevent the damage into the pipes of the geothermal system, ensure a fluid without air and increase the efficiency of the geothermal pipe.

When the geothermal system is started, a pump in shutoff circuit enables the fluid having 75 % of water and 25 % of methanol to circulate between a geothermal thermopump and a geothermal sensor in the ground.

The fluid entrance is located in middle of the tank (1) that is connected by a tee (8) to a connecting pipe (11) of each side and which is connected to a shutoff valve (7) which is connected to a purging and filling valve (6) which is connected to an adapter (10) that is connected to the geothermal pipe.

Moreover, each purging and filling valve (6) enables to eliminate air and do the filling in the geothermal system by means of an external pump that is connected to the geothermal system.

The fluid exit is located in bottom of the tank (1) that is connected to a elbow (13) which is connected to an optional pump (2) which is connected to a connecting piece (14) that is connected to a shutoff valve (3) and which is connected to an adapter (10) that is connected to the geothermal pipe.

Seeing that the diameter of the tank (1) is taller than its entering, that allows to decrease the fluid speed and separate air from fluid in directing air towards the top of the tank and the fluid towards the bottom of the tank.

A pipe (9) having an upper transparent portion is connected by a tee (12) to each end of the tank (1) for visualize in all time the state of the system, and each valve (4)(5) are connected to the pipe (9) for adding fluid if necessary or eliminating air.

Finally, the tank (1) may be installed to the geothermal system without use the optional pump (2) enabling to do again circulate the fluid coming from the tank inside the geothermal pipe.

**Legend:**

1 = tank

2 = pump

3 = shutoff valve

4 = valve

5 = valve

6 = purging and filling valve

7 = shutoff valve

8 = tee

9 = pipe

10 = adapter

11 = connecting pipe

12 = tee

13 = elbow

14 = connecting piece

15 = geothermal thermopump

Although only a single embodiment of the present invention has been described and illustrated, the present invention is not limited to the features of this embodiment, but includes all variations and modifications within the scope of claims.